

### REMARKS

Claims 1 through 26 are in the application, with Claims 1 through 8, 10 through 17 and 19 through 26 having been amended. Claims 1, 9 and 18 are the independent claims herein. No new matter has been added. Reconsideration and further examination are respectfully requested.

Applicants initially thank the Examiner for indicating that Claims 2 through 5, 11 through 14, and 20 through 23 would be allowable if rewritten in independent form. Applicants reserve the right to amend these claims in this matter in a future response.

#### Claim Objections

Claims 2 through 8, 10 through 26 were objected to because of the alleged informalities noted in the Office Action. In response, Claims 2 through 8 and 10 through 17 were amended as suggested by the Examiner. Withdrawal of the objections to Claims 2 through 8 and 10 through 17 is respectfully requested.

Claims 18 through 26 are believed to be proper and have therefore not been amended as suggested. For example, the suggestion to remove the "A" from Claim 18 would render Claim 18 grammatically incorrect. The objection to Claim 18 may have been proper if Claim 18 recited "media", which is a plural noun, rather than "medium", which is a singular noun. However, because "medium" is a singular noun, Claim 18 is properly prefaced by the article "A".

Claims 19 through 26 are dependent from Claim 18 and therefore properly refer to the subject matter (i.e., a medium) of Claim 18. It is believed that that the suggestion to refer to the steps of Claim 18, rather than to the medium specified in Claim 18, would render Claims 19 through 26 less definite than they presently stand.

Applicants therefore respectfully request reconsideration and withdrawal of the objections to Claims 18 through 26.

#### Art Rejections

Claims 1, 6 through 10, 15 through 19, and 24 through 26 were rejected as allegedly being anticipated by U.S. Patent No. 6,493,424 B2 (hereinafter "Whitham"). Reconsideration and withdrawal of the rejection are respectfully requested.

### Claim 1

Amended independent Claim 1 relates to an apparatus including an accelerator waveguide and a detuning device. The accelerator waveguide includes an end cavity to output first particles from the end cavity at a first energy in a first mode and to output second particles from the end cavity at a second energy in a second mode. The detuning device is coupled to the end cavity and is to selectively detune the end cavity.

Whitham is not seen to disclose or to suggest the foregoing features of independent Claim 1. More particularly, Whitham is not seen to disclose or to suggest at least a detuning device coupled to an end cavity of an accelerator waveguide and to selectively detune the end cavity.

Whitham, rather, describes a system to operate a standing waveguide accelerator in two or more modes. According to column 5, lines 6 through 49 of Whitham, linear accelerator 10 can be operated in a  $\pi/2$  resonance mode that exhibits a  $\pi/2$  phase shift per accelerating cavity 50, and in one or more non- $\pi/2$  resonance modes which may be less efficient than the  $\pi/2$  resonance mode due to rf losses experienced in side cavities 56.

Column 5, line 61 through column 6, line 46 of Whitham describes the operation of linear accelerator 10 in a  $\pi/2$  resonance mode and in a non- $\pi/2$  resonance mode. Differences between operation in the two modes may include the use of a different X-ray target 32, a different rf energy level supplied by a microwave source, and a different input charged particle beam injection current.

The Office Action cites column 5, lines 1 through 5 as "inherently" disclosing a detuning device. M.P.E.P. 2112(TV) states: "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Office Action does not provide any such basis or reasoning and therefore the §102 rejection based on inherency is improper. Moreover, Applicants have thoroughly considered the cited portion and find no description, inherent or otherwise, of a detuning device coupled to an end cavity of linear accelerator 10 and to selectively detune the end cavity. The cited portion, rather, refers to the tuning of accelerating cavities 50 and coupling cavities 56 to the same frequency. Whitham therefore does not disclose a detuning device coupled to an end cavity and to selectively detune the end cavity.

Amended independent Claim 1 and its associated dependent claims are therefore believed to be allowable and withdrawal of the rejection thereof is respectfully requested.

#### Claims 9 and 18

Independent Claim 9 concerns a method that includes operating an accelerator waveguide to output first particles from a tuned end cavity of the accelerator waveguide at a first energy, detuning the end cavity, and operating the accelerator waveguide to output second particles from the detuned end cavity at a second energy.

The art of record is not seen to disclose or suggest the foregoing features. Whitham, for instance, makes no mention of tuning or detuning an end cavity of an accelerator waveguide. As mentioned above Whitham describes the operation of linear accelerator 10 in a  $\pi/2$  resonance mode and in a non- $\pi/2$  resonance mode. In order to switch between operation in each mode, Whitham describes changing one or more of an X-ray target 32, an rf energy level supplied by a microwave source, and an input charged particle beam injection current. Whitham does not remotely disclose or suggest operating an accelerator waveguide to output first particles from a tuned end cavity of the accelerator waveguide at a first energy, detuning the end cavity, and operating the accelerator waveguide to output second particles from the detuned end cavity at a second energy.

Claim 9 and its associated dependent claims are believed to be allowable. Independent Claim 18 relates to a medium storing process steps roughly corresponding to the method of Claim 9. Accordingly, Claim 18 and its dependent claims are also believed to be allowable. Reconsideration and withdrawal of the rejections of these claims is respectfully requested.

### CONCLUSION

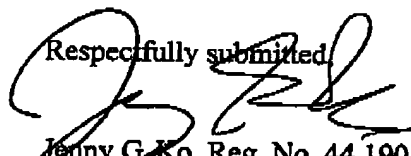
The outstanding Office Action presents a number of characterizations regarding the applied reference, some of which are not directly addressed herein because they are not related to the rejections of the independent claims. Applicants do not necessarily agree with the characterizations and reserves the right to further discuss those characterizations.

For at least the reasons given above, it is submitted that the entire application is in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience. Alternatively, if there remains any question regarding the present application or any of the cited references, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is cordially requested to contact the undersigned.

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